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10/695,684	10/28/2003	Mark Pereira	NVID-P000621	5051

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EXAMINER
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PAUL, DISLER

ART UNIT	PAPER NUMBER
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2615

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/08/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/695,684	<b>Applicant(s)</b> PEREIRA, MARK	
	<b>Examiner</b> Disler Paul	<b>Art Unit</b> 2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                               | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                      | 5) <input type="checkbox"/> Notice of Informal Patent Application                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____  |

### DETAILED ACTION

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 1-4,7,9,13 are rejected under 35 U.S.C. 102(a) as being anticipated by Kataoka ("US 2002/0181723 A1").

Re claim 1, Kataoka discloses an audio-based tracking system ("fig. 1-9, page 1[0014] line 1-4-motion of the robot will be tracked by means of beamforming") comprising: a speaker at a fixed-location for transmitting an audio signal ("page 1[0014] line 12; page 2[0019] line 4-6; page 4[0043] line 5-7-sound source i.e (speaker) being captured"); a plurality of microphones mounted upon an object for receiving said audio signal ("page 2[0019] line 4-5; page 2[0018] line 5-7; page 3[0035] line 4-5; fig. 1/1, fig. 9; also see page 3[0037] line -6-9"); a computing device for determining at least one of a position and orientation of said object as a function of a delay of said audio signal received by each of said plurality of microphones ("fig. 1/6-(delay calculator), fig. 2/13, 19-robot embed with computing device to enable (13-19) based on receiving sounds received for further please see page 1[0014] line 1-4; page 1[007] line 1-4 and page 3[0036] line 4-7").

Re claim 2, the audio-based tracking device according to claim 1, where in said audio signal comprising a sinusoidal signal ("fig.6-8- sinusoidal signal being captured and track by microphones; page 1/(formula(2-3))")

Re claim 3, The audio-based tracking system according to claim 1, where in said audio signal comprises a marker("fig.7-8; page 1[0007] line 8-12-different amplitude sound is being capture as function of time (marker), also please see page 1[0008]") and wherein said delay is determined as a function of receipt of said marker by each of said plurality of microphones ("page 1[0010] lien 1-4; fig. 1/5; fig.6-8-error is delay between each received sound signals"):

Re claim 4, The audio-based tracking system according to claim 1, where in said delay is determined as a function of time delay of said audio signal received by each of the plurality of microphones ("page 3[0038] line 12-15; page 1[0007] line 1-3; page 1[0008]").

Re claim 7, Kataoka discloses a method of tracking ("fig.1-9, page 1[0014] line 1-4-motion of the robot will be tracked by means of beamforming") comprising: transmitting a first audio signal from a first speaker ("page 1[0014] line 12; page 2[0019] line 4-6; page 4[0043] line 5-7-sound source i.e (speaker) being captured"); receiving said first audio signal at a plurality of microphones ("page 2[0019] line 4-5; page 2[0018] line 5-7; page 3[0035] line 4-5; fig. 1/1, fig.9; also see page 3[0037] line -6-9");

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determining a delay of said received first audio signals for each of said plurality of microphones ("fig. 1/plurality of microphone(1) with delay (6)") ; and determining at least one of a relative position and relative orientation of said plurality of microphones as a function of said determined delay ("fig. 1/6-(delay calculator), fig. 2/13, 19-robot embed with computing device to enable (13-19) based on receiving sounds received for further please see ; page 1[007] line 1-4 and page 3[0036] line 4-7").

Re claim 9, the method of tracking according to claim 7, where in said first audio signal comprising a sinusoidal signal ("fig. 6-8- sinusoidal signal being captured and track by microphones; page 1/(formula(2-3))").

Re claim 13, the method of tracking according to claim 7, wherein said determined at least one of said relative position and said relative orientation controls an application executing on a computing device ("page 1[0005] line 8-10-base on acoustic sensor voice enable the performing of voice recognition and see fig. 1/based on position/orientation (fig. 1/10) control application (fig. 1/9) voice recognition.").

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 5-6,12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka ("US 2002/0181723 A1"), and further in view of Cristiamo Avigni ("US 2003/0142829 A1").

Re claim 6, the audio-based tracking system according to claim 1, however, Kataoka fail to disclose the said plurality of said microphones communicate wirelessly with said computing device. Avigni discloses a system for capturing sound from a moving object in which plurality of microphones communicate wirelessly with computing device ("fig. 2/10, fig. 3-(plurality of microphones) with computing device (fig. 2/100; fig. 10/100); page 1[0005] line 11-12") for the purpose of wirelessly transmitting such signals to location remote from the moving object. Therefore taking the teaching of Kataoka and Avigni as a whole, it would have been obvious for one skill in the ordinary art to incorporate the said plurality of said microphones communicate wirelessly with said computing device in Kataoka for the purpose of wirelessly transmitting such signals to location remote from the moving object.

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Re claim 5, The audio-based tracking system according to claim 1, However, Kataoka fail to disclose wherein the system determined at least one of said position and said orientation of said object controls the position of a cursor of said computing device, However, that limitation is the inventor's preference, official Notice is taken that it would have been obvious for one of ordinary skill in the art to have a display in which the system the system determined at least one of said position and said orientation of said object controls the position of a cursor of said computing device.

Re claim 12, also have been analyzed and rejected with respect to claim 5 above.

5. Claims 8,10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka ("US 2002/0181723 A1"), and further in view of Feit et al. ("US2005/0036631").

Re claim 8, the method of tracking according to claim 7, further comprising: transmitting said first audio signal from said first speaker during a first period of time("page 1[0014] line 12; page 2[0019] line 4-6; page 4[0043] line 5-7-sound source i.e (speaker) being captured, with period of time page 1[0008]"); determining a plurality of delay of said received first audio signal for each of said plurality of microphones during said first and second period of time("fig. 1/plurality of microphone(1) with delay

(6)”) and page 1[0008]”); determining at least one of said relative position(“page 3[0037] line 10-12”) and said relative orientation(“page 3[0036] line 4-7; page 3[0037] line 14-19”) of said plurality of microphones as a function is said determined plurality of delays (“page 3[0038] line 3-6”).

Kataoka fail to disclose the transmitting said first audio signal from a second speaker during a second period of time. However, Feit et al. disclose a system and method for testing audio signal in which said first audio signal from a second speaker during a second period of time (“page 1[0010] line 5-8”) for the purpose of testing of each subsystem of loudspeaker. Thus taking the teaching of Kataoka and Feit et al. as a whole, it would have been obvious for one of ordinary skill in the art, to incorporate first audio signal from a second speaker during a second period of time in Kataoka for the purpose of testing of each subsystem of loudspeakers. Receiving said first audio signal form said second speaker at said plurality of microphones (“Kataoka, Fig. 1/1(plurality of microphones)”).

Re claim 10, the method of tracking according to claim 7, further comprising: determining a delay of said received second audio signal for each of said plurality of microphones (“fig. 1/(1,6); page 1[0010] lien 1-4; fig. 1/5; fig. 6-8-error is delay between each received sound signals”) ; and determining at least one of said relative position (“page 3[0037] line 10-12”) and said relative orientation (“page 3[0036] line 4-7; page



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3[0037] line 14-19") of said plurality of microphone as a function of said determined delay of said received second audio signal (" page 3[0038] line 3-6").

Kataoka fail to disclose the transmitting said second audio signal from a second speaker. However, Feit et al. disclose a system and method for testing audio signal in which said first audio signal from a second speaker ("page 1[0010] line 5-8") for the purpose of testing of each subsystem of loudspeaker. Thus taking the teaching of Kataoka and Feit et al. as a whole, it would have been obvious for one of ordinary skill in the art, to incorporate transmitting second audio signal from a second speaker in Kataoka for the purpose of testing of each subsystem of loudspeakers. Receiving said second audio signal form said second speaker at said plurality of microphones ("Kataoka, Fig. 1/1(plurality of microphones)").

Re claim 11, the method of tracking according to claim 10, whereing said second audio signal comprises a sine wave (" fig. 5-second sine wave signal"), however, Katakao and Feit et al. as a whole, fail is silent in regard in to the second signal having a second frequency, however, he did not preclude that the frequency of second signal could have been different from the first signal, since the modified function of Kataoka by Feit would have still function properly, thus Official Notice is taken that it would have been obvious for one skill in the art to have a second signal with a second frequency.

6. Claims 14,17-18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka ("US 2002/0181723 A1") and Curry et al. ("US 7,012,630 B2").

Re claim 14, Kataoka discloses a computing system ("fig. 1-9, page 1[0014] line 1-4-motion of the robot will be tracked by means of beamforming") comprising: a speaker for generating a wave at an above-audible frequency ("page 1[0014] line 12; page 2[0019] line 4-6; page 4[0043] line 5-7-sound source i.e (speaker) being captured"); said computing device for determining at least one of a relative position and relative orientation of said assembly based on delay differences of said signals ("fig. 1/6-(delay calculator), fig. 2/13, 19-robot embed with computing device to enable (13-19) based on receiving sounds received for further please see page 1[0014] line 1-4; page 1[007] line 1-4 and page 3[0036] line 4-7").

Kataoka fail to disclose a plurality of microphones mounted on an assembly, said assembly for mounting on an object. However, Curry et al. discloses a plurality of microphones mounted on an assembly, said assembly for mounting on an object ("fig. 1A/101 with plurality of microphones (103, 105)") for the purpose of capturing spatial sound information. Therefore, taking the combined teaching of Kataoka and Curry et al. as a whole, it would have been obvious for one of ordinary skill in the art to modify Kataoka, by incorporating the plurality of microphones mounted on an assembly, said

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assembly for mounting on an object for the purpose of capturing spatial sound information.

The modified combined teaching of Kataoka and Curry et al, as a whole teach the above, however, the modified of Kataoka and Curry et al. fail to teach a computing device couple to control said speaker. Curry et al. teach the spatial sound capturing system in which teach a computing device couple to control said speaker ("fig. 5-speakers( fig.5/60) coupled to computing device (fig.5/12) and col.15 line 65-67") for the purpose of providing a spatialized audio generator output, thus taking the combined teach of Kataoka and Curry et al, as a whole it would have been obvious for one of ordinary skill in the art to modify Kataoka and Curry et al. as a whole, by incorporating the computing device couple to control said speaker for the purpose of providing a spatialized audio generator output. Said computing device coupled to receive signals from said plurality of microphones ("Kataoka, fig.1/1(plurality of speaker) couple to computing device (9-in performing voice recognition)")

Re claim 17, the computing system as described in claim 14, wherein said plurality of microphones comprise two microphones and wherein said determined at least one of said relative position and said relative orientation of is within a single spatial plane ("fig.1/1-microphones being positioned in single spatial plane").

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Re claim 18, the computing system as described in claim 14, wherein said plurality of microphones comprise two microphones ("fig. 1/1") and wherein said determined at least one of said relative position and said relative orientation ("page 1/0005] line 8-10-base on acoustic sensor voice enable the performing of voice recognition and see fig. 1/based on position/orientation (fig. 1/10) control application (fig. 1/9) voice recognition."), However, the combined teaching of Kataoka and Curry et al as a whole, failed to teach the determination of relative position/orientation is within two spatial planes. However, Official Notice is taken that the limitation of determination of position/orientation within two spatial planes is commonly known, thus it would have been obvious for one skill in the art to determine the relative position/orientation within two spatial planes.

Re claim 20, the computing system as described in claim 14, wherein said wave is a sine wave ("fig. 6-8- sinusoidal signal being captured and track by microphones: page 1/(formula(2-3))").

Re claim 19, The audio-based tracking system according to claim 1, However, Kataoka fail to disclose wherein the system determined at least one of said position and said orientation of said object controls the position of a cursor of said computing device with a display, However, that limitation is the inventor's preference, official Notice is

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taken that it would have been obvious for one of ordinary skill in the art to have the robot with computing device adapted with a display in which the system the system determined at least one of said position and said orientation of said object controls the position of a cursor of said computing device.

7. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka ("US 2002/0181723 A1") and Curry et al. ("US 7,012,630 B2") and further in view of Cristiamo Avigni ("US 2003/0142829 A1").

Re claim 15, the computing system as described in claim 14, however, the combined teaching of Kataoka and Curry et al. as a whole, fail to teach the computer is wirelessly coupled to said plurality of microphones. But, Avigni discloses a system for capturing sound from a moving object in which plurality of microphones communicate wirelessly with computing device ("fig. 2/10, fig. 3-(plurality of microphones) with computing device (fig. 2/100; fig. 10/100); page 1[0005] line 11-12") for the purpose of wirelessly transmitting such signals to location remote from the moving object.

Therefore taking the teaching of Kataoka and Curry et al. and Avigni as a whole, it would have been obvious for one skill in the ordinary art to incorporate the said plurality of said microphones communicate wirelessly with said computing device in Kataoka for

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the purpose of wirelessly transmitting such signals to location remote from the moving object.

The modified combined teaching of Kataoka and Curry et al. and Avigni as a whole, teach the above, However, the teaching fail to disclosed the computing device is a personal computer, However, using a personal computing is the inventor's preference, thus official Notice is taken that it would have been obvious for one of ordinary skill in the art to have the computing device to be a personal computer.

8. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka ("US 2002/0181723 A1") and Zwern ("US 6,445,364 B2") and further in view of Cristiamo Avigni ("US 2003/0142829 A1").

Re claim 16, the computing device as described in claim 14, wherein said computing device is a game console ("fig. 1-2; robot-game console interacting with playing through voices") however, Kataoka fail to disclose wherein said game console is wirelessly coupled to said plurality of microphones. Avigni discloses a system for capturing sound from a moving object in which plurality of microphones communicate

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wirelessly with computing device ("fig. 2/10, fig. 3-(plurality of microphones) with computing device (fig. 2/100; fig. 10/100); page 1[0005] line 11-12") for the purpose of wirelessly transmitting such signals to location remote from the moving object.

Therefore taking the teaching of Kataoka and Avigni as a whole, it would have been obvious for one skill in the ordinary art to incorporate the said plurality of said microphones communicate wirelessly with said computing device in Kataoka for the purpose of wirelessly transmitting such signals to location remote from the moving object.

### **Conclusion**

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Wilcock (" US 2002/0143414 A1") discloses an audio user interface in which head trackers apparatus is used to sense head position and orientation relative to a fixed frame.

Amir et al. (" US 2002/0090094") discloses a system in which gain of plurality of microphones is being adjusted based on position and orientation of a speaker relative to the microphones.

Mao ("US 2005/0047611") discloses method of noise reduction with plurality of microphone array capable of tracking an audio signal from a plurality of sources.

**Contact**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Disler Paul whose telephone number is 571-272-2222. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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